

### **REMARKS**

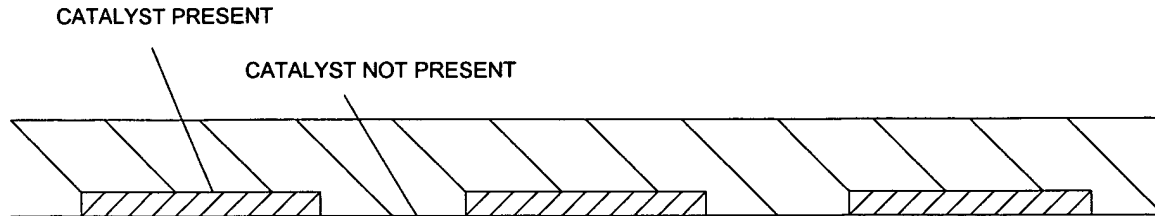
Claims 1-3 and 6-11 are pending in this application. Claims 4 and 5 have been canceled above without prejudice or disclaimer. Claims 1-3 and 6-11 stand rejected. Favorable reconsideration is respectfully requested in view of the following remarks.

Claims 1 and 3 were rejected under 35 USC 102(b) as being anticipated by WO 96/24958. To anticipate a claim under § 102, a single prior art reference must identically disclose each and every claim element. See Lindeman Maschinenfabrik v. American Hoist and Derrick, 730 F.2d 1452, 1458 (Fed. Cir. 1984). If any claimed element is absent from a prior art reference, it cannot anticipate the claim. See Rowe v. Dror, 112 F.3d 473, 478 (Fed. Cir. 1997). In view of the foregoing authority, it is respectfully submitted that the cited reference does not support the asserted rejection.

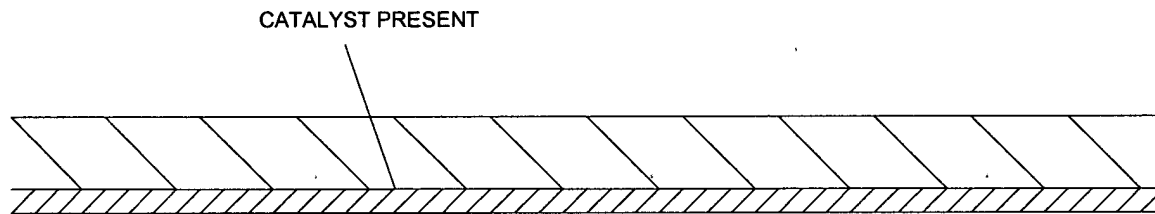
The present invention as recited in claim 1 relates to a polymer electrolyte fuel cell including, among other features, a catalyst layer having a structure differing between an upstream portion and a downstream portion, wherein the upstream portion of the catalyst layer has a structure for preventing a drying up of the fuel cell, and the downstream portion of the catalyst layer has a structure for preventing a flooding of the cell.

In the Office Action, the Examiner in effect acknowledges that WO 96/24958 does not teach the recited limitations. In item 2 of the Office Action (p. 2), it is observed that the "upstream (i.e., *uncatalyzed*) zone prevents drying up of the fuel cell, and the downstream (i.e., *catalyzed*) zone prevents flooding" (emphasis added). By contrast, claim 1 requires that *both* the upstream and downstream portions are part of a catalyst layer. For clarity, this structural difference is illustrated below:

## WO 96/24958



## THE PRESENT INVENTION



Moreover, claim 1 as amended now incorporates the features of claims 4 and 5. WO 96/24958 is clearly silent as to the features of claims 4 and 5.

Accordingly, claim 1 is allowable over WO 96/24958. Additionally, because claim 3 incorporates the limitations of claim 1 by dependency, claim 3 is likewise allowable over WO 96/24958 for at least the reasons discussed in connection with claim 1. Withdrawal of the rejection of claims 1 and 3 as anticipated by WO 96/24958 is therefore respectfully requested.

Claims 1 - 11 were rejected under 35 USC 103(a) as being unpatentable over Wilkinson et al. (US app. pub. no. 2003/0082432, hereafter "Wilkinson"). Of these

claims, claims 1-3 and 6-11 remain pending. To establish a prima facie case of obviousness under § 103, all claim limitations of a claimed invention must be taught or suggested by the prior art. See MPEP, Section 2143.03 and In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). In view of the foregoing authority, it is respectfully submitted that the cited reference does not support the asserted rejection.

As noted above, the limitations of claims 4 and 5 have been incorporated into claim 1, and thus claim 1 now includes limitations as to, among other things, a catalyst layer with pores of varying sizes in different locations, and an amount of an electrolyte of the catalyst layer.

Wilkinson, on the other hand, discloses only that the loading of an electrocatalyst metal may be varied as the catalyst layer is traversed in-plane, and discloses nothing about pores, a pore amount, a pore size, and an amount of an electrolyte of the catalyst layer as, by contrast, is required by claim 1 as amended.

The Examiner acknowledges that Wilkinson does not disclose the claimed matter. However, the Examiner contends that "the artisan would be able to ascertain, via the disclosure of catalyst loading, that the pore volume and/or pore size between the catalyst particles would progressively increase in a downstream direction" (Office Action, p. 5, 2nd par.). In making this conclusion, the Examiner assumes that the thickness of the catalyst layer is constant (Office Action, p.4, 1st par.)

The Applicant respectfully submits that, not only is a constant thickness for the catalyst layer an assumption on the part of the Examiner, but so is the presence of pores and a correlation between "catalyst loading" and pore volume and size in the catalyst layer. While pores and porosity are described with respect to other elements of Wilkinson, no mention of pores can be found by the undersigned in connection with the electrocatalyst layer 35 and 45 of Wilkinson. The "catalyst loading" referred to in Wilkinson appears to involve using differing percentages of metal (see Wilkinson, par. 44); it is completely obscure how this variation in percentage of metal leads to pores and the relationship between pore size and the assumed constant thickness of the catalyst layer of Wilkinson according to the Examiner's formulation. Moreover, the

Examiner's attention is drawn to the fact that claim 1 as amended explicitly recites a catalyst layer of a non-uniform thickness, e.g., "a thickness of said catalyst layer is greater at said upstream portion than at any other portion of the catalyst layer."

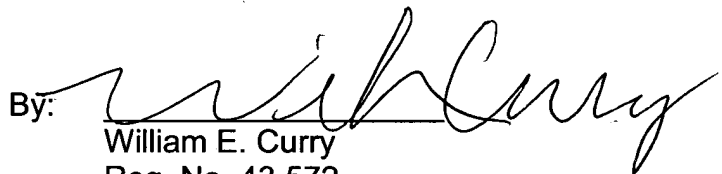
In view of the above, the Applicant respectfully submits that claim 1 is allowable over Wilkinson, and consequently, dependent claims 2, 3 and 6-11 are likewise allowable for at least the reasons discussed in connection with claim 1. Withdrawal of the rejection of claims 1-3 and 6-11 as unpatentable over Wilkinson is therefore respectfully requested.

In light of the above discussion, Applicant respectfully submits that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance.

The Examiner is invited to contact the undersigned at (202) 220-4323 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 11-0600.

Respectfully submitted,

Dated: May 10, 2004

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